Energy Policy Update

October 7, 2013

The Energy Policy Update electronic newsletter is published by the Arizona Governor's Office of Energy Policy and is provided free of charge to the public. It contains verbatim excerpts from international, domestic energy, and environment-related publications that are reviewed by community outreach personnel. For inquiries, call 602-771-1143 or toll free to 800-352-.5499. To register to receive this newsletter electronically or to unsubscribe, email Gloria Castro.

CONTENTS

ARIZONA-RELATED

ACC Staff Shoots Down APS Plans for Net Metering

[Phoenix Business Journal, Sept. 30] A recommendation from the Arizona Corporation Commission staff calls for the rejection of two Arizona Public Service Co. alternatives to deal with how solar customers are compensated for producing excess energy. The recommendation, filed late Monday, came from staff that said APS' request to change how it pays for that extra energy, a policy known as net metering, should not be altered at least until the utility's next rate case in 2016. Staff made the recommendation because it believes the commission will have more leeway in dealing with APS' rate structures inside a rate case than trying to work a patchwork fix. "Staff believes this recommended course of action is the most effective and appropriate method of dealing with the APS (net metering) cost-shift issue," the report said.

APS Solar Plant in Flagstaff Celebrates "*Sunny Sweet 16*"

Arizona's First Commercial Solar Plant Began Producing Power in October 1997

[Business Wire, Oct. 1] Flagstaff, AZ – The APS plant that gave birth to commercial solar power in Arizona quietly comes of age this month in Flagstaff. Instead of celebrating with a glamorous "Sunny Sweet 16" party, this teenager will simply keep turning sunlight into clean, renewable energy for APS customers. The APS solar power plant began delivering electricity in October 1997, making it the first commercial solar operation in the state. Housed within the APS Flagstaff service yard, the plant produces 82 kilowatts of solar power, enough to power 21 homes. It uses single axis tracking technology to maximize the sun's energy.

Building Better Energy Efficiency

Small-business projects still lag far behind large commercial ones in use of green solutions. SRP, cities are taking action.

[Arizona Republic, Sept. 28] Energy efficiency is increasingly being built into most large, new construction projects around Arizona, but small commercial buildings rarely go beyond the minimum building codes. It is more difficult to justify the added construction costs for restaurants, retailers, auto dealers and other small to medium-size operations, so developers tend to leave fancy skylights, foam insulation and other

electricity-saving amenities for big projects. That's putting their future tenants at a disadvantage because efficiently built structures are cheaper to run, experts say. Buildings that use the government's Energy Star guidelines use 35 percent less energy than similar buildings and cost 50 cents-per-square-foot less to operate, according to the Energy Department. Part of the reason small buildings are forgoing efficiency is that the owners are not usually the occupants of small buildings, distancing them from the utility bills. Another is lack of demand from renters, who tend to focus more on rental rates than efficiency. Plus, some developers struggle to find contractors familiar with common efficiency concepts. This makes small businesses a prime target for retrofitting programs that cut energy use, utility officials said. But retrofitting buildings can do only so much to lower a business' electricity bill.

Efficiency Project Reports Findings

[Arizona Republic, Sept. 28] Businesses owned by women were more than five times less likely to participate in energy-efficiency projects than those owned by men, according to the initial report from a stimulus project in downtown Phoenix. The city was awarded a $25 million grant through the American Recovery and Reinvestment Act, or stimulus, through the U.S. Department of Energy. The program, called Energize Phoenix, targets homes and businesses along a 10-mile stretch of light rail. The three-year project was to be completed by June, but the city got an extension through this month, because only about $17 million of the funding had been spent by the original deadline, according to Energy Department records. City of Phoenix officials report that about $21 million has now been spent, with the rest to be spent by the new deadline. The grant helps businesses and homeowners pay for energy-efficiency studies on their buildings as well as upgrades to help save power and money. The grant comes with a requirement that the results be studied and made public. Arizona State University's Global Institute of Sustainability completed an annual report for 2012, with some interesting findings from the first 154 businesses to complete upgrades. More than 800 commercial projects and about 2,000 residential projects will be upgraded by the end of the program, according to the city.

First U.S. Night Solar Plant Gets Non-Gov't Investor

[Investors Business Daily, Oct. 2] The first major solar energy plant in the U.S. with thermal storage, Solana, is getting a $300 million investment from Liberty Interactive Media (LINTA), an owner of websites with interests from TripAdvisor.com (TRIP) to multichannel retailer HSN (HSN), and now has total investment of about $2 billion, according to the plant owner. Spain's Abengoa Solar is building Solana, the largest parabolic trough solar plant in the world, near Gila Bend, Ariz. The plant is in its final testing phase with a total installed capacity of 280 megawatts, enough to power 70,000 homes. With the thermal storage, it will generate electricity day and night and be able to adapt to consumption demands. The project got a federal loan guarantee for $1.45 billion. Liberty's $300 million investment, in the limited liability company that holds Solana, is attributed to the Liberty Ventures Group (LVNTA) arm of Liberty that owns about 22% of TripAdvisor, 2% of Time Warner Cable (TWC) and other media holdings as well as some other green energy investments. Back in 2008, it worked with U.S.-based solar equipment manufacturer SunPower (SPWR) on a 1-megawatt solar electric power farm at the QVC Rocky Mount distribution center in Rocky Mount, N.C.

Grant to Help Plan Border-Tech Manufacturing Future

[Arizona Daily Star, Oct. 6] A regional collaboration including the University of Arizona and Pima County will develop a strategic plan for manufacturing in Southern Arizona and New Mexico with the help of a half-million-dollar federal grant. The collaboration, Innovation Frontier Southwest, was awarded a $457,000 grant last week by the U.S. Department of Commerce Economic Development Administration, and is part of the Investing in Manufacturing Communities Partnership, an initiative to accelerate U.S. manufacturing. The grant is designed as a series of targeted studies that will allow the border region to determine current assets and deficits in infrastructure, workforce,

research and policy. Innovation Frontier will use the data to address and develop a strategic plan. The project was developed by Innovation Frontier, government, academia and industry, and will work to build a regional strategy for manufacturing, making use of the region's strength in border technology, the grant partners said. Innovation Frontier Southwest is a collaboration of Tech Parks Arizona, the University of Arizona's technology-parks arm; Pima County; the Arizona Commerce Authority; the city of Tucson; the Greater Yuma Economic Development Corp.; the New Mexico Manufacturing Extension Partnership; New Mexico State University Engineering/New Mexico Resource Network; and Tucson Regional Economic Opportunities Inc.

Net-Zero Energy Home Prototypes Emerging in Valley

Energy future could rest on 'green' building blocks

[Arizona Republic, Sept. 30] One of Austin Trautman's heroes is Joseph Eichler, a midcentury California developer who brought beautiful architecture to the masses. Eichler, however, didn't bear the burden of knowing how energy inefficient all those expansive glass walls, skylights and atriums could be. Trautman, an environmentalist with a degree in kinesiology from Arizona State University, does. He has spent the past three years researching the best way to build a net-zero energy home, east of downtown Phoenix, that produces all the power it consumes. Trautman tagged Valley architect Matthew Salenger of CoLAB Studio and builder James Trahan of 180 Degrees, known for building some mammoth modern luxury homes, to create a prototype that celebrates both modern design and green building. "I like big puzzles," Trautman, owner of Vali Homes, said from the finished house, where he talked in detail about its airtight building envelope, lack of waste during construction and its efficient wall system with "half the wood and three times the insulation of a typical home." Because the home is relatively small, with airtight walls and well-placed windows, a 3.6-kilowatt photovoltaic solar-energy system will power it. Although the Valley has plenty of inefficient older houses, Trautman's project is one of many that is challenging standard homebuilding practices and pushing energy-efficient technologies. Another was just completed in north Phoenix, where a team of architecture, engineering and construction students from ASU and the University of New Mexico collaborated to create a net-zero energy home — one that is also transportable. On Thursday, the ASU/UNM team will compete against 19 other entries at the U.S. Department of Energy's Solar Decathlon in Irvine, Calif. The event is a Super Bowl of sorts for solar-powered homes aimed at creating a new generation of builders who think green. The event is held every two years, because it takes that long to dream up, engineer and construct these sustainable homes, which are judged on performance, affordability and livability.

ALTERNATIVE ENERGY AND EFFICIENCY

Clean Energy Fuels Distributing "Waste" Natural Gas

[Domestic Fuel, Oct. 4] Clean Energy Fuels Corp. has announced that it will be the first company to commercially distribute a renewable natural gas vehicle fuel, called Redeem, made from waste streams such as landfills, large dairies and sewage plants, directly to fleets around the country. In addition, natural gas fleets will be able to purchase Redeem at the 35 public Clean Energy stations throughout California. "It's a landmark day for Clean Energy as the first company to make this revolutionary and renewable transportation fuel made from waste available to our customers," said Andrew J. Littlefair, president and CEO of Clean Energy. "Our goal is to produce and distribute 15 million gallons of Redeem in our first year, which can make significant progress towards achieving California's climate change goals and prove that this is a viable, cleaner and abundant alternative fuel source for our future." Clean Energy is staking its position in the renewable fuels market through a significant investment in natural gas fueling infrastructure, including 400 fueling stations throughout the nation, as well as in the development of multiple biomethane production facilities that will produce Redeem.

Coupled Solar and Energy Storage Market to Grow to US$2.8 Billion in 2018, Says Lux Research

[DIGITIMES, Oct. 1] Corporates playing in the solar and energy storage segments have long dreamed of combining the two complementary technologies to differentiate products and defend margins. This symbiotic match shows promise, yielding a US$2.8 billion market over the next five years, according to Lux Research. Grid-tied solar installations will comprise 675 megawatts, or nearly 95% of the combined 711 megawatt market, while off-grid applications including telecom power claim the remaining 5%. While the off-grid market enjoys higher profit margins, the much larger addressable market for grid-tied systems means they dominate the solar and energy storage market. "Developers are pushing packaged solar and storage systems in order to stand out as value-adding leaders, but not all benefit equally," said Steven Minnihan, Lux Research senior analyst. "Residential energy storage will see a boost adoption due to solar, but the addition of storage will barely move the needle for solar players, driving a paltry 1% increase in global PV sales." Assessing the emerging market for combined solar and energy storage, Lux Research analysts found that residential applications will dominate through 2018. As lithium-ion (Li-ion) batteries and overall storage arrays fall in price, residential systems will gain the most, growing to 382 megawatts in 2018. The light commercial segment will increase to 220 megawatts while heavy commercial/industrial systems lag, growing only to 73.3 megawatts.

IKEA Starts Selling Solar Panels for Homes

[Associated Press, Sept. 30] STOCKHOLM — Swedish flat-pack furniture giant IKEA will start selling residential solar panels at its stores in Britain, the first step in its plan to bring renewable energy to the mainstream market worldwide. The company started selling solar panels made by China's Hanergy in its store in Southampton on Monday. It will sell them in the rest of Britain in coming months, it said. A standard, all-black 3.36 kilowatt system for a semi-detached home will cost 5,700 British pounds ($9,200) and will include an in-store consultation and design service as well as installation, maintenance and energy monitoring service. "In the past few years the prices on solar panels have dropped, so it's a really good price now," IKEA Chief Sustainability Officer Steve Howard told The Associated Press. "It's the right time to go for the consumers."

Mexican Sun Lures Cash to Solar as Panel Prices Plunge

Mexico, poised to allow foreign oil extraction for the first time in 75 years, is finding its abundant natural resources also appeal to investors in a much cleaner energy: sunshine. First Solar Inc. (FSLR) of the U.S. has bought its first projects in Mexico, while more than a dozen other developers including Germany's Saferay GmbH and Spain's Grupotec Tecnologia Solar SL own licenses there. Local investor Gauss Energia opened Latin America's largest photovoltaic plant in the country last month. The project "will open the way for the development of the photovoltaic sector," Gauss Chief Executive Officer Hector Olea said in an e-mail. "There have been multiple announcements but very little real development work so far even though the regulatory system is sound and conducive to bankable projects." Mexico, a top 10 oil producer, plans to generate 35 percent of its power from clean sources by 2026, up from less than 15 percent now, to curb emissions and diversify its energy mix. A global surplus of solar panels has made them cheaper, while the costly oil-fired plants common in areas such as Durango, Sonora and southern Baja California make solar a competitive option. Gauss and Portugal's Martifer SGPS SA opened a 30-megawatt plant in La Paz, Baja California, on Sept. 12 with funding from International Finance Corp. and Nacional Financiera SNC bank. While Mexico doesn't subsidize large solar, the $100 million project offered an economic alternative to fossil-fueled power in the area, where solar radiation exceeds the national average.

Solar Power's Growth Outpaces Wind Energy

[Electric Light & Power, Sept. 30] A strong showing from global solar photovoltaic (PV) installations, coupled with a sharp fall in new wind energy capacity, has led to solar

power growth outpacing wind this year — for the first time ever. Analysis from Bloomberg New Energy Finance predicts that 36.7 GW in new solar PV capacity will be added worldwide in 2013, compared with 35.5 GW in new wind power installations (33.8 GW onshore and 1.7 GW offshore). Both wind and solar PV broke records last year, with onshore and offshore wind adding 46.6 GW and solar PV adding 30.5 GW. But 2013's slowdown in the two largest wind markets, China and the U.S., is opening the way for the rapidly growing PV market to overtake wind, BNEF said. Justin Wu, BNEF's head of wind analysis, said, "We forecast that wind installations will shrink by nearly 25 percent in 2013, to their lowest level since 2008, reflecting slowdowns in the U.S. and China caused by policy uncertainty." In the U.S., the repeated last-minute extension of the production tax credit has created what analysts have called a perpetual boom-and-bust cycle. This year's uncertainty led to a drop in investment, causing significant layoffs and facility closures across the wind supply chain.

Third Quarter Solar PV Installations Reach Record High of 9 Gigawatts, According to NPD Solarbuzz

Mid-year global solar PV demand grows to a record level of 17 GW with trade-war uncertainties having a minimal impact on continued end-market growth

[Solabuzz, Oct. 2] Santa Clara, CA – During Q3'13, end-market demand from the global solar PV industry reached a new Q3 record of 9 GW. This record demand is up 6% Q/Q and almost 20% Y/Y, according to findings in the latest NPD *Solarbuzz Quarterly* report. Both mid-year quarters, Q2'13 and Q3'13, have achieved record solar PV demand levels, resulting in more than 17 GW of new solar PV installations. This mid-year surge in new installations is almost 3 GW more than the solar PV industry has ever achieved in the past. "The record levels of mid-year demand in 2013 have been critical to the overall recovery of the solar PV sector," added Michael Barker, senior analyst at NPD Solarbuzz. "Restored confidence in end-market growth is allowing leading solar PV manufacturers to pursue aggressive shipment strategies within both established and emerging territories, despite previous concerns that trade wars could dampen growth."

Utilities, Solar Companies in Fight Over Rates

[Associated Press, Oct. 2] ATLANTA — Sunlight is free, but if you use it to make electricity your power company wants you to pay. Utilities in many states say solar-friendly rate plans, conceived to promote alternative energy sources, are too generous and allow solar customers to avoid paying for the grid even though they use it. Some power companies are proposing an extra fee for solar customers. Others are trying to roll back or block programs that allow those customers to trade the solar power they generate during sunny days for power they need from the grid during other times. As rooftop solar expands from a niche product to a mainstream way to save money on power bills, utilities are afraid they will lose so many customers — and revenue — that they won't be able to afford to build and maintain the grid. "We want to make sure that as we change the way our system works that all of that is good for all customers," said Greg Roberts, vice president of pricing and planning at Southern Co. subsidiary Georgia Power. The utility is proposing additional fees for renewable energy users, including one that would add up to about $22 per month for typical home solar systems. Solar installers say the utility industry is trying to hold onto customers — and protect profits — as U.S. homes and businesses become more efficient and generate their own electricity. Rooftop solar systems would not be economical with some of the new fees or rate changes being pushed by utilities.

LED Lighting Line in U.S., While IKEA Offers Solar Kits in U.K.

[Forbes, Oct. 2] The energy revolution is coming to the masses. Walmart announced today that it is introducing its Great Value line of super efficient LED light bulbs for under $10 in its U.S. stores and online. The company undertook a similar retail effort in 2006, with a specific goal at that time to sell 100 million to promote high efficiency (CFLs) compact fluorescent bulbs, a goal it exceeded three months ahead of schedule. The array of products includes 26 different types of bulbs, with the least

expensive – a non-dimmable 60-watt equivalent – selling for $8.88, and the dimmable version for just a dollar more. LEDs have enormous advantages over traditional incandescent bulbs in that they consume only 20% of the energy (mostly by reducing waste heat) and last as much as 25 times longer. In addition to the Great Value line, Walmart is also offering a new dimmable GE LED for under $11. John Strainic, GE's Consumer Lighting General Manager notes in a press release that this is a continuation of the partnership between Walmart and GE. Until now, this has been focused on using GE lighting technology to improve efficiencies of the stores themselves and helped transform lighting markets for commercial applications (see related post from yesterday. 'We've taken the good collaboration we've made with Walmart to increase the efficiency of their facilities, and are beginning to make the same inroads in the customer lighting aisle.'

ENERGY/GENERAL

An Uphill Climb for the Oil Giants

[New York Times, Sept. 30] Cambridge, MA – The big international oil companies are going through a crisis little noticed by analysts and the markets. It is a crisis of results and of vision. Simply put, the majors — companies like Exxon Mobil, Royal Dutch Shell and BP — aren't growing. They have discovered relatively little oil in recent years despite increasing investment. They also have lost their exclusive lock on the skills that made them indispensable to oil-producing countries. Several factors are at play. The big companies are gradually becoming producers of natural gas more than oil. In some cases, 50 percent of their reserves, their unproduced resources, consist of natural gas. It might be appropriate to call them gas majors than oil majors. The problem with this transformation is that it threatens their profitability, which is today still largely based on oil fields that were developed many years ago and whose output is in steady decline.

China Push into Synthetic Natural Gas Has Pollution Consequences

Burning synthetic natural gas may be cleaner, but making it results in enormous greenhouse gas emissions

[Scientific American, Oct. 2] When the Chinese government recently folded to public outrage over Beijing's record-breaking levels of smog, some thought it could signal a forceful shift to clean energy in the country. Instead, it looks like it might do the opposite. China is in the process of approving a new fleet of large-scale, coal-fueled synthetic natural gas (SNG) plants to be built in northwestern China and Inner Mongolia, projects that would emit seven times as much greenhouse gases as conventional natural gas plants, according to a new study out in the journal *Nature Climate Change*. Nine projects have been approved; two recently completed the first phase of construction, and two more recently began construction. On Aug. 20, the first SNG plant in Xinjiang began piping natural gas eastward. According to the study, assuming use of 90 percent of production, the nine approved plants would emit 21 billion metric tons of CO2 over their 40-year lifetimes. Conventional natural gas plants would emit 3 billion metric tons over the same period. There were more than 30 proposed SNG plants in China in 2012, according to the paper's authors, Chi-Jen Yang and Robert Jackson of Duke University.

U.S. Gears Up to Be a Prime Gas Exporter

[New York Times, Sept. 30] Cove Point, Maryland — Deep in a narrow underwater tunnel, workers wearing hard hats pedal bicycles towards a terminal, an island of gray pipes and pilings a mile off the Western Shore of Maryland on the Chesapeake Bay. When it originally opened in 1978, the chilly passageway was intended to bring liquefied natural gas from large tankers onshore to the Dominion Cove Point facility, where it was warmed, turned back into gas and sent on to customers. But Cove Point has had a sporadic history and has not been visited by a tanker for delivery since 2011 thanks to reduced U.S. demand for natural gas. Now, Dominion Transmission wants to reverse the flow. It is seeking regulatory approval for a plan to invest $3.8

billion so that Cove Point could cool U.S. gas to –265 degrees Fahrenheit (–165 Celsius) and export the resulting L.N.G. The company has already signed 20-year contracts with utilities in Japan and India. Thomas F. Farrell, chief executive of Dominion Resources, which owns the facility, said Cove Point, which has easy access to the Marcellus shale fields in Pennsylvania, was “cost-effective and environmentally compatible.” Dominion is just one of many companies now seeking approval to export L.N.G. from about 20 upgraded or new facilities in the United States. The companies want to take advantage of the recent flood of cheap shale gas brought on by advanced drilling techniques and helped by the extensive American domestic pipeline network.

INDUSTRIES AND TECHNOLOGIES

Filling the Gaps in the Flow of Renewable Energy

[New York Times, Oct. 2] SAN FRANCISCO — The biggest problem with solar panels and wind turbines is that they do not produce energy all the time. So what is the solution? Batteries. And other technologies that store energy to be released when it is needed. As renewable energy becomes increasingly commonplace, interest in energy storage technologies is growing around the world. Researchers in Germany, Japan, the United States and elsewhere are finding governments increasingly willing to support their ideas, although many projects are in the early stages. Cheap, large-scale energy storage is considered the holy grail of renewable power because it would allow wind and solar farms to provide constant energy to the electric grid. Energy storage “was a kind of Cinderella topic until a few years ago — no one really paid much attention to it,” said Peter Bruce, a chemistry professor at the University of St. Andrews in Scotland. Now, “there is a huge interest in this across the world.” A big focus of the research is on advanced batteries. Traditionally, a chief limitation of batteries and supercapacitors — electrical systems that charge and discharge power quickly — has been that they do not last long enough, just as a laptop battery may degrade over time, according to Valeria Nicolosi, a research professor at Trinity College in Dublin. Today, tiny substances called nanomaterials are emerging that “can hold mechanical distress much much better,” she said. Dr. Nicolosi is working on such technologies with a grant from the European Research Council. Britain just connected its first large-scale battery, rated at 2 megawatts, to the grid in August, in the Orkney Islands. The system resembles several cargo containers and can store more than 10,000 times as much energy as an iPad battery. In Texas, the utility company Duke Energy recently began using an even more powerful battery, rated at 36 megawatts, at a remote wind farm. Stranger-sounding ways to store energy are also getting a fresh look. Air that is compressed and stored in places like caverns during times of excess electricity production can be released to create power when it is needed, via turbines. Projects using this technology are moving forward in New Hampshire and Germany.

Fuel Cell Vehicles Get Big Push in California, Germany

[SustainableBusiness.com News, Oct. 1] While the average person has yet to embrace hybrids, much less electric cars, some policy makers and car manufacturers are planning for their biggest bet of all - fuel cell cars that run on hydrogen. Last month, California's legislature passed a bill (AB 8) that appropriates $2 billion to continue incentives for purchases of low-carbon vehicles through 2023 for cars, trucks, buses and construction equipment. Included in the bill is $20 million a year to build a state-wide network of hydrogen fueling stations, following through on former Governor Arnold Schwarzenegger's vision of a Hydrogen Highway. The goal is to install at least 100 hydrogen stations in the next few years. Currently, just 10 hydrogen stations in the US are open to the public, nine of which are in California (the other is in South Carolina). The legislation will create tens of thousands of jobs in California's clean transportation tech industry and set us on a course to meet our clean air and climate goals," says John Boesel, CEO of CALSTART. Two other recently passed pieces of legislation make electric cars much easier to charge. It requires most new

buildings to have charging stations and makes it possible for people to charge their cars at any of them.

Bacteria Produce 50 Percent More Fuel

By changing the way certain organisms process sugar, UCLA researchers have shown how to produce more biofuel. Researchers at UCLA have opened a path to cheaper and cleaner biofuels by using genetic engineering to fundamentally change how certain organisms process sugar. Conventional biofuels are either too expensive to compete with fossil fuels or they release so much carbon dioxide that they're hardly worth making—or both. The UCLA advance, which increases the amount of biofuel that can be made from sugar by 50 percent, could make it cheaper to produce biofuels from a variety of sources, especially biomass such as wood chips and grass. The U.S. biofuels industry is in desperate need of such advances—even though Congress has mandated that a certain amount of biofuel from biomass be blended with gasoline, high costs and other factors have limited production, leading the EPA to repeatedly waive the requirement. The UCLA work is a "promising advance in biofuels technology," says Wade Robey, chief technology officer at the ethanol producer POET. He says it shows the potential of advanced genetic engineering "to drastically reduce both greenhouse gas emissions and the amount of corn or biomass used to produce a gallon of biofuel." In conventional biofuels production, sugar derived from sources such as corn and biomass is fed to yeast, which ferments it to produce ethanol. But the fermentation process wastes a third of the carbon atoms that make up sugar; rather than being used to make ethanol, the carbon is released in the form of carbon dioxide. The UCLA researchers cobbled together genes from a variety of organisms to create an alternate way to process sugar that doesn't emit any carbon dioxide, and uses all of the carbon in sugar to make biofuel. They created genetically modified E. coli bacteria to demonstrate the process, but they say the same genetic pathway could be incorporated into other organisms, including yeast.

GM and U.S. Army to Expand Fuel Cell Testing

General Motors and the U.S. Army Tank Automotive Research, Development & Engineering Center are expanding their collaboration in the development of hydrogen fuel cell technology.

[Automotive World, Sept. 30] Through a new Cooperative Research and Development Agreement, GM and TARDEC will jointly test new hydrogen fuel cell-related materials and designs to evaluate their performance and durability before assembling them into full scale fuel cell propulsion systems. This collaborative effort will enable GM and TARDEC to jointly develop technology that meets both of their requirements, accomplishing more tangible results than either entity could achieve on its own. The project is expected to continue for up to five years. "GM welcomes the opportunity to further expand our work with TARDEC developing fuel cell technology," said Charlie Freese, executive director of GM's global fuel cell engineering activities. "We believe hydrogen fuel cell technology holds tremendous potential to one day help reduce our dependence on petroleum and we are committed to building on our leadership through the continued development." This is the second fuel cell-related announcement GM has made this year. In July, GM and Honda announced a long-term, definitive master agreement to co-develop a next-generation fuel cell system and hydrogen storage technologies, aiming for the 2020 time frame.

LEGISLATION AND REGULATION

Credits to Spur Renewable Energy Sources Seen Set to End: Taxes

[Bloomberg, Sept. 29] Tax credits for the production of wind power and other renewable energy sources face expiration at year's end amid few signs Congress will decide to continue them, tax lobbyists and other analysts say. Failure to extend the 16 tax credits could stymie the development of wind power and the other renewables by undercutting incentives to invest in them, Bloomberg BNA reported. Neither of the tax-writing committees in the House and Senate have yet to mark up a legislative package

to extend the provisions, with time running short before they expire Dec. 31, energy analyst Kevin Book said. “It’s pretty telling” that “there is still no draft, no amendment has come up for a vote” on the extension, said Book, the managing director of research for ClearView Energy Partners, a Washington-based consulting firm. “A better than average probability” exists that the expiring tax credits will be allowed to lapse, Book said, though he predicted they would be retroactively reinstated at some point in 2014. In addition to the 2.3 cent-per-kilowatt-hour tax credit for wind, geothermal and closed-loop biomass, other expiring energy incentives include a $1 per-gallon credit for biodiesel producers, a $1.01 per gallon credit for cellulosic ethanol and multiple credits for energy-efficient homes and appliances. Congress extended the energy credits through 2013, at a price of $18 billion, as part of the measure enacted Jan. 1 that averted income tax increases for most Americans -- the so-called fiscal cliff -- that were set to take effect with the new year.

Firefighters Alarmed by Latest Rescue Risk: Solar Panels

[FoxNews.com, Oct. 2] Firefighters across the nation are alarmed at the prospect of battling blazes in buildings topped with solar panels, which can create new risks of roofs collapsing, an inability to gain footing and even potential electric shock. Two recent fires involving structures decked with solar panels have triggered complaints from fire chiefs and calls for new codes and regulations that reflect the dangers posed by the clean-energy devices. A two-alarm fire last week at a home in Piedmont, Calif., prompted Piedmont Fire Chief Warren McLaren to say the technology “absolutely” made it harder on firefighters. Weeks earlier, in Delanco, N.J., more than 7,000 solar panels on the roof of a massive 300,000-square foot warehouse factored into Delanco Fire Chief Ron Holt’s refusal to send his firefighters onto the roof of a Dietz & Watson facility. “We may very well not be able to save buildings that have alternative energy,” New Jersey’s Acting Fire Marshall William Kramer told The Star-Ledger. Experts told FoxNews.com that the biggest danger posed by the panels is that they continue to send voltage down from the roof throughout the building even after power is shut down. In a conventional building, firefighters typically cut off the electricity leading into the house before entering. “First of all, solar panels are designed to generate electricity any time there’s light received by the panels, and that happens in low-light settings as well,” said Ken Willette, a spokesman for the National Fire Protection Association. “So inherently, those are charged electrical appliances … there’s a shock hazard.” Solar panels also frequently utilize the very space firefighters use for rooftop ventilation during structure fires and create potentially dangerous conditions for slips and falls. “In some applications, the solar panels have covered 100 percent of the roof, which allows the firefighter no room to operate,” Willette continued. “That’s not what you want to have happen when you’re operating on a pitched roof.” With the panels rising in popularity, firefighters and building industry experts say codes must catch up. The average price of a solar panel has declined 60 percent since 2011 and industry trade groups expect that systems will be installed, on average, every four minutes in the United States by the end of 2013, primarily in California, Arizona, New Jersey and North Carolina.

WESTERN POWER

1.1GW Cluster Planned for Texas

Tri-Global Energy has announced plans for the creation of a cluster of wind farms with a potential capacity of 1.1GW in the Texas

[Wind Power Monthly, Sept. 25] The Hale Community Energy project will be made up of Hale County Wind Farm, LLC, CottonWind Farms, Lakeview Wind Farms, and East Mound Renewable Energy Project. The company intends to install between 500 and 650 turbines, to be developed in five phases of construction. Tri-Global said it expects the first 200MW phase to be operational in late 2015, and for the entire project to be online by mid 2018. It will stretch over nearly 500 square kilometres, owned by more than 340 landowners. The project is partly community owned and has more than 450 shareholders.

NorthWestern Energy Acquires 633 MW of Hydro

[Energy Prospects West, Oct. 1] NorthWestern Energy will pay $900 million to acquire PPL Montana's hydroelectric portfolio, bringing to an end Montana's disastrous deregulation policy. The deal returns 11 hydro facilities back into NorthWestern Energy's portfolio to serve Montana customers. The 633 MW of projects were part of Montana Power's portfolio before being sold to PPL Montana in 1999. Three years later, NorthWestern Energy acquired Montana Power's transmission and distribution assets.

WECC Takes Big-Picture Look at Its Transmission Future

[Energy Prospects West, Oct. 1] A study of the Western Interconnection's future under a variety of scenarios finds that in the likeliest of worlds, the region's grid will be adequate to support growing loads and RPS mandates. Looking ahead to 2022 and 2032, the Western Electricity Coordinating Council's 2013 Interconnection-wide Transmission Plan focuses on the interaction of energy policy, cost, environmental impacts and energy infrastructure, and how those interactions will impact the grid's efficiency and reliability. It also analyzes industry trends and future infrastructure needs under a variety of scenarios, and provides recommendations for stakeholders. The study's 10-year "Common Case" that represents an "expected" future for the Western Interconnection is based on several assumptions, including: all 30 regionally significant transmission projects (such as Boardman-Hemingway and Gateway West) are completed by 2022, adding about 3,400 miles of 345-kV or higher voltage lines to the region's grid; sufficient generation is added or retired to meet planning reserve margins and to comply with RPS requirements and California's Once-Through-Cooling regulations; and states' energy efficiency and DSM programs are fully realized.

ARIZONA STATE INCENTIVES/POLICIES

ARIZONA COMMERCE AUTHORITY (ACA)

- Angel Investment Tax Credit Program **-** The main objective of the Angel Investment program is to expand early stage investments in targeted Arizona small businesses. The program accomplishes this goal by providing tax credits to investors who make capital investment in small businesses certified by the Arizona Commerce Authority (ACA). To view the list of businesses that have been certified under this program please click here.

  Income Tax Credit Provisions

  An investor seeking an income tax credit must document to the ACA the investment was made in either a qualified rural or bioscience company or any other qualified small business. For a qualified bioscience or rural company, the tax credit may total up to 35% of the investment amount over three years; for any other qualified business, the tax credit may total up to 30% over three years. If the tax credits exceed the investor's income tax liability, any unused tax credit amount may be carried forward for up to three taxable years as long as the investor timely claims the credits with Revenue.

  The ACA may authorize up to $20 million in tax credits to qualified investors beginning July 1, 2006 through June 30, 2016. The tax credits will be authorized on a first come, first served basis, which is established by the date and time the investor files an application with the ACA. Download the Angel Tax Credit Allocation Table Angel Tax Credit Allocation Table to view the remaining amount of tax credits available. For more detailed information please see below or direct questions to the Program Manager.

- Arizona Innovation Accelerator Fund - The Arizona Innovation Accelerator Fund Program is an $18.2 million loan participation program funded through the U.S. Department of Treasury's SSBCI and managed by the Arizona Commerce Authority. The goal of this program is to stimulate financing to small businesses and

manufacturers, in collaboration with private finance partners, to foster business expansion and job creation in Arizona.

- Arizona Innovation Challenge - The Arizona Innovation Challenge is an investment in the minds of talented entrepreneurs in Arizona and around the world. The ACA will award $1.5 million to the most promising technology ventures that participate in the Challenge (awards may range from $100,000 to $250,000).

- AZ Fast Grant - Technology Commercialization Assistance - Next round of grants opening in mid November. This competitive grant enables Arizona-based technology companies to initiate the commercialization process. The grant will pay up to $7,500 to provide one or more of the following professional consulting services:
  - An expert review of the technology under development to determine if it already exists, is a good candidate for intellectual property protection and is likely to find an attractive market.
  - A commercialization feasibility study to identify showstoppers to commercialization before resources are spent commercializing a technology that is unlikely to succeed.
  - Other commercialization assistance such as training or preparation for the submission of a federal SBIR/STTR grant application or another acceptable means of technology commercialization.

- AZ Step Grant - Grant funding from the U.S. Small Business Administration (SBA) with matching funds contributed by the Arizona Commerce Authority (ACA) offering a number of services and tools to Arizona small businesses as they go global for the first time with sales or enter new, international markets.

- Commercial/Industrial Solar Energy Tax Credit Program - The primary goal of the Commercial/Industrial Solar Energy Tax Credit Program is to stimulate the production and use of solar energy in commercial and industrial applications by subsidizing the initial cost of solar energy devices. The program achieves this goal by providing an Arizona income tax credit for the installation of solar energy devices in Arizona business facilities. For more detailed information please see below or direct questions to the Program Manager.

- Healthy Forest - Harvesters, initial processors and transporters of small diameter timber, may receive: Transaction Privilege Tax Exemptions, Use Tax Exemption and New Job Income Tax Credits.

- Job Training Program offers job specific reimbursable grants for employers creating new jobs or increasing the skill and wage level of their current employees. Deadline: Year Round

- Renewable Energy Tax Incentive Program offers a refundable income tax credit and property tax reduction to companies in solar, wind, geothermal and other renewable energy industries who are expanding or locating a manufacturing or headquarters operation in Arizona. The tax credit is up to 10% of the total qualified investment amount and the property tax benefit can reduce a company's property taxes by up to 75%. Deadline: Year Round

- Research and Development Tax Credit is an Arizona income tax credit for increased research and development activities conducted in this state. Starting in 2010, a qualifying company may be eligible to claim a partial refund of its current year excess R&D credit. Applicants may apply at the end of their tax year but prior to filing a tax return with Revenue.

- Quality Jobs Tax Credit Program - Beginning July 1, 2011, this new program provides Arizona income tax credits for companies creating new jobs and investing in Arizona. The credit is valued at up to $9,000 over a 3-year period per each new employee and offers a 5-year carry forward provision for any unused tax credits.

Eligibility qualifications are different for rural and metro areas.

- Bonds Administered by the Arizona Commerce Authority
- Federal Programs

- Pollution Control Tax Credit - Provides a 10 percent income tax credit on the purchase price of real or personal property used to control or prevent pollution.
- Renewable Energy Production Tax Credit - An income tax credit awarded to utility-scale generation systems based on the amount of electricity produced annually for a 10-year period using solar or wind energy. Questions can be directed to Georganna Meyer (602-716-6927) or Elaine Smith (602-716-6924).
- **Sales Tax Exemption for Machinery and Equipment**
  Exemptions are available for:
  1. Machinery or equipment used directly in manufacturing, see ARS 42-5159(B)(1).
  2. Machinery, equipment or transmission lines used directly in producing or transmitting electrical power, but not including distribution, see ARS 42-5159(B)(4).
  3. Machinery or equipment used in research and development, see ARS 42-5159(B)(14).

  Questions can be directed to Christie Comanita (602-716-6791).
- Solar Liquid Fuel Tax Credit - Income tax credits are available for research and development, production and delivery system costs associated with solar liquid fuel. Questions can be directed to Georganna Meyer (602-716-6927) or Elaine Smith (602-716-6924).
- Database of State Incentives for Renewables and Efficiency (DSIRE)
  - Arizona Incentives/Policies
  - Federal Incentives/Policies
  - Solar Policy News - DSIRE provides summaries of current solar policy developments and an archive of past solar policy developments. Current solar news appears below the news archive, which is searchable by several criteria.

GRANTS

The following solicitations are now available:
(Click on title to view solicitation)

- U.S. Dept. of Agriculture - Rural Development Grant Assistance
- Advanced Manufacturing Technology Consortia (AMTech) Program – Optional Pre-applications should be received no later than Friday, September 6, 2013. Full applications must be received no later than 11:59 p.m. Eastern Time, Monday, October 21, 2013. Applications received after the deadline will not be reviewed or considered.
- SBIR/STTR FY 2014 Phase I Release 1 – Response due by October 15, 2013
- Bio-refinery Assistance Program – Response due October 31, 2013
- Energy, Power, and Adaptive Systems – Response due November 1, 2013

- Electronics, Photonics, and magnetic Devices - Response due November 1, 2013
- USDA Rural Community Development Utilities Programs - Response due November 12, 2013
- SunShot Initiative - Responses due November 20, 2014
- Solid Waste Management Grant - Response due December 31, 2013
- Energy Frontier Research Centers – Response due by January 9, 2014
- Environmental Sustainability - Response due February 20, 2014
- Energy for Sustainability - Response due February 20, 2014
- Environmental Health and Safety of Nanotechnology - Response due February 20, 2014
- Particulate and Multiphase Processes- Response due February 20, 2014
- Thermal Transport Processes - Response due February 20, 2014
- SunShot "Race to the Roof" Initiative - Registration due October 31,2014
- Repowering Assistance Program – Ongoing
- Rural Business Enterprise Grants– Ongoing
- Rural Business Opportunity Grants– Ongoing
- Renewable Energy RFPs - Solicitations for Renewable Energy Generation, Renewable Energy Certificates, and Green Power – Various Deadlines

ENERGY-RELATED EVENTS

2013

NEW! Fall 2013 - Solar and Sustainable Buildings Tours

Living with the Sun - Arizona Style 2013 - Tours of Solar and Sustainable Buildings

Arizona Governor Jan Brewer has issued a proclamation designating October as Solar and Renewable Energy Month, recognizing the American Solar Energy Society's annual National Solar Tour of solar installations and energy sustainable buildings. As part of the National Tour, events in Arizona include a lecture and local tours on different weekends in different parts of the state. The tours provide an opportunity for the public to see solar and green building examples in person. Tours in Arizona can be experienced throughout the month at the following Arizona locations:

- October 12 - Coconino County/Flagstaff Sustainable Buildings Tour
- October 26-27 - Valley of the Sun - Phoenix Metro Tours
- November 2 - Pine, AZ
- November 9-10 - Tucson Innovative Home Tour

VerdeXchange Arizona 2013
October 8 Scottsdale, AZ

IGSHPA Conference & Expo
October 9-10 Las Vegas, NV

VERGE – Converging Energy, Information, Building & Transportation
October 14-17 San Francisco, CA

- **NEW!** 3rd Annual Envision Tucson Sustainable Festival
  October 20 Tucson, AZ

- Solar Power International
  October 21-24 Chicago, IL

- NGV Bridge Market Development & Infrastructure Summit 2013
  October 29-30 Boston, MA

- AWEA Wind Energy Fall Symposium
  November 6-8 Colorado Springs, CO

- **NEW!** Expo Industrial Convention
  Nov. 7-8 Hermosillo, Sonora Mexico

- Border Energy Forum XX
  November 6-9 San Antonio, TX

- **NEW!** Power Generation Week
  November 12-14 Orlando, FL

- GreenBuild International Conference and Expo
  November 20-22 Philadelphia, PA

- Ecobuild America 2013
  December 9-13 Washington, D.C.

- Green Building Lecture Series
  Granite Reef Senior Center Scottsdale, AZ

2014

- Energy, Utility & Environment Conference
  February 3-5, 2014 Phoenix, AZ

- 2014 Energy Outlook Conference
  February 4-7, 2014 Washington, DC

- Green Biz Forum 2014
  February 18-20, 2014 Phoenix, AZ

- Green Building Lecture Series
  Granite Reef Senior Center Scottsdale, AZ